Fire Inspector II – Course Syllabi

FI-2: Administration

Unit 1: Introduction
Topic 1: Orientation and Administration 1:00

Unit 2: Role of the Fire Inspector II
Topic 1: The Role of the Fire Inspector II 2:00

Unit 3: Permits
Topic 1: Permit Application Processing 1:00
Topic 2: Permit Regulation Enforcement 1:00

Unit 4: Complex Complaints
Topic 1: Investigating Complex Complaints 2:00

Unit 5: Modifications to Jurisdictional Codes and Standards
Topic 1: Recommending Modifications to Jurisdictional Codes and Standards 2:00

Unit 6: Inspection Services
Topic 1: Recommend Inspection Services Policies and Procedures 2:00
Topic 2: Inspection Report Evaluation 1:30
Topic 3: Initiating Legal Action 1:30

FI-2: Field Inspection 2A

Unit 1: Introduction
Topic 1: Orientation and Administration 1:00

Unit 2: Emergency Planning and Preparedness Procedures
Topic 1: Evaluating Emergency Plans and Procedures 2:00

Unit 3: Occupant Load and Means of Egress
Topic 1: Occupant Loads 2:00
Topic 2: Complex Means of Egress 3:00

Unit 4: Construction Features
Topic 1: Construction Features 4:00
Topic 2: Construction Features for Wildland Urban Interface Areas 2:00

Unit 5: New Fire Protection Systems and Equipment
Topic 1: Installation of a New Water-Based Fire Protection System 6:00
Topic 2: Installation of a New Special Agent System 2:00
Topic 3: Installation of a New Fire Detection and Alarm System 4:00
Topic 4: Deficiency Verification and Resolution 2:00

FI-2: Field Inspection 2B

Unit 1: Introduction

Topic 1: Orientation and Administration 1:00

Unit 2: Fire Growth Potential in a Building or Space

Topic 1: Components that Effect Fire Growth 3:00
Topic 2: High Piled Combustible Storage 4:00

Unit 4: Storage, Handling, and Use of Hazardous Materials, Flammable and Combustible Liquids, and Gases

Topic 1: Hazardous Materials 10:00
Topic 2: Hazardous Materials Management Plan 2:00

Unit 3: Industrial Hazards and Processes

Topic 1: Industrial Hazards and Processes Evaluation 8:00

Unit 4: Existing Fire Protection Systems and Equipment

Topic 1: Evaluation of an Existing Fire Protection System 1:00
Topic 2: Water-Based Fire Suppression Systems 4:00
Topic 3: Special Agent Fire Suppression Systems 2:00
Topic 4: Fire Detection and Alarm Systems 2:00

Course: **FI-2: Administration** **CFSTE**
Hours: 17:00 (14:00 = instruction / 3:00 = testing)
Designed For: The certified Fire Inspector I advancing to the Fire Inspector II classification
Description: Upon completion of this course, the student will be familiar with the role of a Fire Inspector II; processing permit applications and enforcing permit regulations; investigating and resolving complex complaints; modifying jurisdictional codes and standards; and recommending inspection policies and procedures, evaluating inspection reports, and initiating inspection-related legal action.
Prerequisites: FI-1: Administration
FI-1: Field Inspection 1A
FI-1: Field Inspection 1B
FI-1: Fireworks and Explosives
Passing Criteria: 80%
Certification: Fire Inspector II
Class Size: 30
Restrictions: None

REQUIRED STUDENT MATERIALS	EDITION	VENDORS
▪ California Fire Code	current	International Code Council (ICC)
▪ *Fire Inspection and Code Enforcement*	7th	IFSTA
REQUIRED INSTRUCTOR MATERIALS	**EDITION**	**VENDORS**
▪ California Fire Code	current	International Code Council (ICC)
▪ California Building Code	current	International Code Council (ICC)
▪ CCR Title 19	current	www.oal.ca.gov/publications.htm
▪ *Fire Inspection and Code Enforcement*	7th	IFSTA

VENDORS		
SFT	State Fire Training Bookstore (916-445-8158)	http://sft.fire.ca.gov

FI-1: ADMINISTRATION COURSE SYLLABUS

Course Objectives: to provide the student with…

a) Information about the role of a Fire Inspector II
b) Information about processing permit applications and enforcing permit regulations
c) Information about investigating and resolving complex complaints
d) Information about modifying jurisdictional codes and standards
e) Information about recommending inspection policies and procedures, evaluating inspection reports, and initiating inspection-related legal action.

Course Content 14:00

Unit 1: Introduction

Topic 1: Orientation and Administration 1:00

Terminal Learning Objective (TLO): At the end of this topic, the student will be able to

Enabling Learning Objectives (ELO):

1. [text]

Discussion Questions

1. [text]

Activities

1. [text]

Evaluation: Formative Test, Summative Test

Unit 2: Role of the Fire Inspector II (CTS: 1-1)

Topic 1: The Role of the Fire Inspector II 2:00

Terminal Learning Objective (TLO): At the end of this topic, the student will be able to describe the role of the Fire Inspector II, the jurisdictional organizations that conduct inspections, and how one's ethics and values impact the work environment.

Enabling Learning Objectives (ELO):

1. Describe the role of the Fire Inspector II, including:
   - Conducting research
   - Interpreting codes
   - Implementing policy
   - Testifying at legal proceedings
   - Creating forms and job aids
   - Delivering public education
   - Conducting field inspections
   - Analyzing new and existing structures and properties for code compliance related to:
     - Construction
     - Occupancy
     - Fire protection
     - Exposures
2. Describe the jurisdictional organizations that have requirements or conduct inspections related to life safety or fire prevention, including:
   - Local authority
   - State authority
   - Federal authority
3. Describe how one's ethics and core values impact the work environment, including:
   - Code enforcement
   - Decision-making models and systems
   - Principle-centered decision making
   - Gifts and gratuities
   - Professional decorum

Discussion Questions

1. What are the jurisdictional organizations that require inspectors to conduct inspections?
2. What ethical situations have you encountered as a fire inspector?

Activities

1. Given several ethics-related scenarios, have students use a decision-making model to come up with

solutions.

Evaluation: Formative Test, Summative Test

Unit 3: Permits (CTS: 1-2)

Topic 1: Permit Application Processing 1:00

Terminal Learning Objective (TLO): At the end of this topic, the student will be able to describe the components of construction and operational-use permit applications and receive permit applications.

Enabling Learning Objectives (ELO):

1. Describe the components of a construction permit (plan review) application, including:
   - Calculations
   - Manufacturer's cut sheets
   - Plans
   - Relevant supporting documents or materials
   - Specifications
2. Describe the components of an operational-use permit application, including:
   - Process or operation description
   - Plans
   - Relevant supporting documents or materials
3. Describe the procedures for receiving a permit application, including:
   - Collecting fees or charges
   - Tracking documentation
   - Verifying application is complete
   - Verifying license and worker's compensation information

Discussion Questions

1. What are the components of a construction permit?
2. What purpose do manufacturer's cut sheets serve?

Activities

1. Given a scenario and a sample permit application, have students complete a permit application.

Evaluation: Formative Test, Summative Test

Topic 2: Permit Regulation Enforcement 1:00

Terminal Learning Objective (TLO): At the end of this topic, the student will be able to enforce permit regulations.

Enabling Learning Objectives (ELO):

1. Describe enforcing permit regulations, including:
   - Visiting the permit activity site
   - Comparing permit to actual activity
   - Identifying and documenting discrepancies
   - Notifying responsible parties
   - Identifying deficiency resolution options
   - Verifying compliance
   - Issuing stop order if necessary
   - Revoking permit if necessary

Discussion Questions

1. When would an inspector visit a permit activity site?

2. When would an inspector issue a stop order notice?

Activities

1. To be determined by instructor.

Evaluation: Formative Test, Summative Test

Unit 4: Complex Complaints (CTS: 1-3)

Topic 1: Investigating Complex Complaints.....2:00

Terminal Learning Objective (TLO): At the end of this topic, the student will be able to validate and resolve complex complaints, identify responses to frequent complex complaints, and describe how political pressure can impact complaint investigations and resolutions.

Enabling Learning Objectives (ELO):

1. Describe validating complex complaints, including:
   - Documenting complaint
   - Reviewing related past files
   - Researching complaint topic
   - Conducting a field inspection
   - Applying related codes and ordinances
   - Documenting findings
2. Describe methods for resolving complex complaints, including:
   - Recognizing the problem
   - Evaluating deficiencies
   - Identifying options for resolution
   - Referring to appropriate level or other agencies when necessary
3. Identify responses to frequent complex complaints, including:
   - Fire or life safety issues requiring an immediate response, including:
     - Impaired fire alarm systems
     - Impaired fire sprinkler systems
     - Overcrowding
   - Construction deficiencies that require time to resolve
   - Change in use or occupancy that may or may not require an immediate response
4. Describe how political pressures impact complaint investigation and resolution

Discussion Questions

1. What type of complaint requires an immediate response?
2. What type of complaint requires immediate correction?

Activities

1. Given a list of five common complaints, have students prioritize the complaints and describe a possible response or resolution.

Evaluation: Formative Test, Summative Test

Unit 5: Modifications to Jurisdictional Codes and Standards (CTS: 1-4)

Topic 1: Recommending Modifications to Jurisdictional Codes and Standards.....2:00

Terminal Learning Objective (TLO): At the end of this topic, the student will be able to identify state statutes that establish authority for state and local agencies to modify codes and standards, develop and adopt codes and standards at the local level, and determine the cost/risk benefits of modifying local

codes and standards.

Enabling Learning Objectives (ELO):

1. Identify the state statutes that establish authority for state agencies to modify codes and standards
   - Health and Safety Code (Section 13143 and 17921(b))
   - California Administrative Code
2. Identify the state statutes that establish authority for local agencies to modify codes and standards
   - Health and Safety Code (Section 17958.7)
     - Express findings to include: climate, geology and topography
3. Describe the development and adoption process for fire and life safety codes and standards, including:
   - Publication of model code used in California by ICC
   - Review and modification by state agencies
   - Adoption by State Building Standards Commission
   - Review and modification by local agencies (during 180 day waiting period)
   - Adoption by local agency
4. Describe the cost/risk benefits of modifying local codes and standards, including:
   - Dollar cost of modification to:
     - Enforcing agency
     - Private industry
     - Citizens
   - Reduction in fire death and injuries
   - Reduction in property loss

Discussion Questions

1. Which state statutes give local agencies the authority to modify codes?
2. What costs are associated with code modification?

Activities

1. Given an existing code and a proposed modification, have students identify the cost/risk benefits of that modification.

Evaluation: Formative Test, Summative Test

Unit 6: Inspection Services (CTS: 1-5)

Topic 1: Recommend Inspection Services Policies and Procedures 2:00

Terminal Learning Objective (TLO): At the end of this topic, the student will be able to describe code enforcement policies and procedures and the reasons for changing a policy or procedure, and recommend policies and procedures for delivering inspection services.

Enabling Learning Objectives (ELO):

1. Describe code enforcement policies and procedures, including:
   - State mandated
   - Local policies and procedures of the jurisdiction
2. Describe reasons why you might change a policy or procedure
   - Actual practices don't follow policy or procedure
   - A current policy or procedure creates another problem
   - A current policy or procedure is inefficient
   - Code changes
   - A policy or procedure addresses a problem that no longer exists

- No policy or procedure exist to address a specific topic
- A policy or procedure is adopted into a higher level code and no longer requires addressing at local level

3. Describe recommending policies and procedures for delivering inspection services, including:
   - Identifying the reason or need for change
   - Developing proposal and gathering or creating supporting documentation
   - Drafting proposed policy or procedural change
   - Meeting with appropriate people for approval
   - Implementation if approved

Discussion Questions

1. What policy or procedure would you change in your jurisdiction? Why?

Activities

1. Given an existing policy and possible reasons for change, have students break into small groups and write a sample policy change with justification.

Evaluation: Formative Test, Summative Test

Topic 2: Inspection Report Evaluation 1:30

Terminal Learning Objective (TLO): At the end of this topic, the student will be able to evaluate completed inspection documentation and the actual inspection process.

Enabling Learning Objectives (ELO):

1. Describe evaluating completed inspection reports, forms and checklists
   - Confirm that information is complete, correct, clear and concise
2. Describe evaluating the inspection process to determine:
   - Code application
   - Timeliness
   - Compliance

Discussion Questions

1. Why should an inspection report be complete, correct, clear and concise?
2. Should someone other than the inspector review all inspection reports?

Activities

1. Given sample inspection forms, have students identify which are complete and what information might be missing.

Evaluation: Formative Test, Summative Test

Topic 3: Initiating Legal Action 1:30

Terminal Learning Objective (TLO): At the end of this topic, the student will be able to initiate legal action related to fire code violations and work cooperatively with legal counsel.

Enabling Learning Objectives (ELO):

1. Describe initiating legal action related to a fire code violations, including:
   - Determining when legal action is required
     - Notice of violation issued
     - Refusal to comply documented
   - Evaluating jurisdictional options related to legal action
   - Issuing notice of legal action
   - Following the due process of the law
2. Describe the process of working cooperatively with legal counsel, including:

- Meeting with local counsel
- Gathering and submitting all available information
- Recommending an outcome or penalty
- Giving depositions with legal counsel present

Discussion Questions

1. When should an inspector initiate legal action against a business owner?
2. Who is your legal counsel within your department or district?

Activities

1. To be determined by instructor.

Evaluation: Formative Test, Summative Test

Summative Testing	1:00
Formative Testing	2:00

Course: **FI-2: Field Inspection 2A** **CFSTES**
Hours: 31:00 (28:00 = instruction / 3:00 = testing)
Designed For: The certified Fire Inspector I advancing to the Fire Inspector II classification
Description: Upon completion of this course, the student will be familiar with principles for evaluating emergency plans and procedures; means of egress and calculating occupant loads; construction features, including those required in a wildland urban interface environment; and the proper installation of new fire protection systems and equipment.
Prerequisites: FI-2: Administration
Passing Criteria: 80%
Certification: Fire Inspector II
Class Size: 30
Restrictions: None

REQUIRED STUDENT MATERIALS	EDITION	VENDORS
▪ California Fire Code	current	International Code Council (ICC)
▪ California Building Code	current	International Code Council (ICC)
▪ *Fire Inspection and Code Enforcement*	7th	IFSTA
REQUIRED INSTRUCTOR MATERIALS	**EDITION**	**VENDORS**
▪ California Building Code	current	International Code Council (ICC)
▪ California Fire Code	current	International Code Council (ICC)
▪ CCR Title 19	current	www.oal.ca.gov/publications.htm
▪ *Fire Inspection and Code Enforcement*	7th	IFSTA

VENDORS		
SFT	State Fire Training Bookstore (916-445-8158)	http://sft.fire.ca.gov

FI-2: FIELD INSPECTION 2A COURSE SYLLABUS

Course Objectives: to provide the student with…

a) Principles for evaluating emergency plans and procedures
b) Information about means of egress and calculating occupant loads
c) Information about construction features, including those required in a wildland urban interface environment
d) An opportunity to identify and verify the proper installation of new fire protection systems and equipment

Course Content 28:00

Unit 1: Introduction

Topic 1: Orientation and Administration 1:00
Terminal Learning Objective (TLO): At the end of this topic, the student will be able to
Enabling Learning Objectives (ELO):
1. [text]
Discussion Questions
1. [text]
Activities
1. [text]

Evaluation: Formative Test, Summative Test

Unit 2: Emergency Planning and Preparedness Procedures (CTS: 2-5)

Topic 1: Evaluating Emergency Plans and Procedures..... 2:00

Terminal Learning Objective (TLO): At the end of this topic, the student will be able to identify occupancies that require emergency evaluation plans, agency and individual roles in developing and implementing emergency evaluation plans, other incidents that may require an inspector to participate in an emergency evaluate plan and information sources for emergency plans. The student will also be able to recommend criteria for and evaluate and emergency evaluation plan.

Enabling Learning Objectives (ELO):

1. Identify occupancies that require emergency evacuation plans, including:
   - K-12 Schools
   - High-rise buildings
   - Hospitals
   - Care facilities
   - Hotels
   - Organized camps
   - Office buildings with two or more stories
   - Covered malls
   - (See CCR Title 19, article 1, section 3.09)
2. Identify agency and individual roles in developing and implementing emergency evacuation plans, including:
   - Authority having jurisdiction
   - Owner / Operator
   - Joint Commission on Accreditation of Hospitals (hospitals only)
3. Identify information sources and recommend criteria for emergency evacuation plans, including:
   - California Fire Code
   - CCR Title 19
   - NFPA 101
   - Joint Commission on Accreditation of Hospitals (hospitals only)
4. Describe evaluating emergency evacuation plans, including:
   - Meets applicable codes and standards
   - Is applicable to occupancy
   - Contains all required elements
   - Exercised as required by code
   - Maintains records
5. Identify other incidents that may require an inspector to participate in an emergency evacuation plan, including:
   - Large scale fire incidents
   - Wildland urban interface fires
   - Natural disasters
   - Terrorism

Discussion Questions

1. What is the role of an AHJ in the development of an evacuation plan?
2. What are some acceptable locations for an evacuation area?

Activities

1. Evaluate sample emergency evacuation plans.

Evaluation: Formative Test, Summative Test

Unit 3: Occupant Load and Means of Egress (CTS: 2-3)

Topic 1: Occupant Loads 2:00

Terminal Learning Objective (TLO): At the end of this topic, the student will be able to compute the maximum allowable occupant load of a multi-use building and assess alternative methods to adjust occupant loads.

Enabling Learning Objectives (ELO):

1. Describe how to compute the maximum allowable occupant load of a multi-use building, including:
   - Identifying the function of each area to be evaluated
   - Determining the correct occupant load factor based on Table 1004.1.1 – Maximum Floor Area Allowable Per Occupant (CFC or CBC)
   - Describing how to determine square footage, including:
     - Gross square footage
     - Net square footage
2. Describe how to assess alternative methods to adjust occupant loads, including:
   - Evaluating the space and its intended use
   - Keeping occupant load in compliance with applicable codes and standards
   - Identifying solutions to increase occupant loads on a case-by-case basis as determined by the AHJ

Discussion Questions

1. Can you allow the number of occupants to exceed the maximum occupant load?

Activities

1. Compute some occupant loads.

Evaluation: Formative Test, Summative Test

Topic 2: Complex Means of Egress 3:00

Terminal Learning Objective (TLO): At the end of this topic, the student will be able to describe and analyze exit access, exits and exit discharge on plans and during field inspections, and resolve egress deficiencies.

Enabling Learning Objectives (ELO):

1. Describe the egress elements of a building or portion of a building, including:
   - Exit access
   - Exit
   - Exit discharge
2. Describe how to analyze egress elements of a building or portion of a building, including:
   - Verifying their existence
   - Verifying that they meet applicable codes and standards
   - Verifying proper maintenance
3. Describe the process for resolving deficiencies, including:
   - Verification
   - Documentation
   - Taking appropriate action to gain code compliance
   - Reporting or referring accordance with jurisdictional codes and standards

Discussion Questions

1. What are some common egress violations?
2. Can you allow the number of occupants to exceed the maximum occupancy load?

Activities

1. Given a set of plans, review the existing system for a list of criteria.

Evaluation: Formative Test, Summative Test

Unit 4: Construction Features (CTS: 2-1)

Topic 1: Construction Features 4:00

Terminal Learning Objective (TLO): At the end of this topic, the student will be able to describe building construction features and the concept of performance-based versus prescriptive design. The student will also be able to use approved plans to evaluate a building's area, height, occupancy classification and construction type; evaluate that life safety systems comply with construction documents; evaluate construction types required for additions or remodels; and resolve deficiencies.

Enabling Learning Objectives (ELO):

1. Describe building construction features, including:
   - Construction types
   - Basic allowable height
   - Basic allowable area
   - Fire-rated assemblies
   - Fire-rated construction
   - Manufacturer's specifications
2. Describe how to evaluate a building's area, height, occupancy classification and construction type, using an approved set of plans, to verify that the building is in accordance with applicable codes and standards
3. Describe the concept of performance-based versus prescriptive design, including:
   - Materials testing
   - Technical analysis
   - Human-factor studies
   - Fire protection engineering principles
4. Describe how to evaluate compliance with construction documents to ensure that the life safety systems and building service equipment are installed, inspected, and tested to perform as described in the engineering documents and the operation and maintenance manual that accompanies the performance-based design
5. Describe how to evaluate the construction type required for an addition or remodeling project based on applicable codes and standards, including:
   - Allowable area
   - Allowable height
   - Appropriate construction type
   - Sprinkler requirements
6. Describe the procedures for resolving deficiencies, including:
   - Identifying deficiencies
   - Referencing applicable codes and standards
   - Documenting deficiencies
   - Reporting a summary of deficiencies
   - Verifying corrective actions
   - Identifying alternate methods and materials for compliance

Discussion Questions

1. Does the code allow wood in a Type III structure?
2. What is performance-based design?
3. How do you resolve deficiencies identified in plan review?
4. If a building addition exceeds allowable height or area, to whom should an inspector refer the project.

Activities

1. Given construction scenarios and occupancy classifications, use California Building Code Table 503 to determine whether or not the project is allowable.
1. Given a set of plans, prepare a report that identifies deficiencies requiring corrective action.

Evaluation: Formative Test, Summative Test

Topic 2: Construction Features for Wildland Urban Interface Areas 2:00

Terminal Learning Objective (TLO): At the end of this topic, the student will be able to describe building construction features required in a wildland urban interface environment.

Enabling Learning Objectives (ELO):

1. Describe building construction features required in a wildland urban interface environment, including:
   - Ignition-resistant construction
   - Roofing
   - Vents
   - Exterior coverings
   - Exterior doors and windows
   - Decking
   - Ancillary structures

Discussion Questions

1. Why do structures in a wildland urban interface environment require different construction features?

Activities

1. Given pictures of structures in a wildland urban interface, have students identify compliant and non-compliant construction features.

Evaluation: Formative Test, Summative Test

Unit 5: New Fire Protection Systems and Equipment (CTS: 2-8)

Topic 1: Installation of a New Water-Based Fire Protection System 6:00

Terminal Learning Objective (TLO): At the end of this topic, the student will be able to describe codes and standards for a water-based extinguishing system and observe and verify field conditions to ensure proper installation.

Enabling Learning Objectives (ELO):

1. Describe codes and standards for a water-based extinguishing system, including:
   - Automatic sprinkler systems
     - Commercial
     - Residential
   - Standpipes
   - Fire pumps
   - Water spray systems
   - Water mist systems
   - Foam-water systems
2. Describe the field conditions that must be observed and verified to ensure the proper installation of a water-based fire extinguishing system, including:
   - Installation techniques
   - Performance-based design
   - Manufacturer's specifications
   - Commissioning and acceptance test of completed installations

Discussion Questions

1. What are the differences between NFPA 13, 13D and 13R automatic sprinkler systems?

Activities

1. Given a list of buildings, identify which sprinkler system should go in each.

Evaluation: Formative Test, Summative Test

Topic 2: Installation of a New Special Agent System 2:00

Terminal Learning Objective (TLO): At the end of this topic, the student will be able to describe codes

and standards for a special agent system and observe and verify field conditions to ensure proper installation.

Enabling Learning Objectives (ELO):

1. Describe codes and standards for a special agent system, including:
   - Dry chemical
   - Wet chemical
   - Clean agent
   - Carbon dioxide
2. Describe the field conditions that must be observed and verified to ensure the proper installation of a special agent system, including:
   - Installation techniques
   - Performance-based design
   - Manufacturer's specifications
   - Commissioning and acceptance test of completed installations

Discussion Questions

1. What type of hazard would require a UL 300 system?
2. What type of hazard would require a dry chemical system?
3. Where would you find clean agent systems?

Activities

1. To be determined by instructor.

Evaluation: Formative Test, Summative Test

Topic 3: Installation of a New Fire Detection and Alarm System 4:00

Terminal Learning Objective (TLO): At the end of this topic, the student will be able to describe codes and standards for and the components of a fire detection and alarm system and observe and verify field conditions to ensure proper installation.

Enabling Learning Objectives (ELO):

1. Describe codes and standards for a fire detection and alarm system
2. Describe the components of a fire detection and alarm system, including:
   - Control unit
   - Detection
   - Notification
   - Power supply
   - Wiring and wiring methods
   - Auxiliary
3. Describe the field conditions that must be observed and verified to ensure the proper installation of a fire detection and alarm system, including:
   - Installation techniques
   - Performance-based design
   - Manufacturer's specifications
   - Commissioning and acceptance test inspection of completed installations

Discussion Questions

1. In a mixed-use occupancy, do all occupancies require a fire alarm system?

Activities

1. Given a list of occupancy classifications and operations, match them to the appropriate fire detection and alarm system requirement.

Evaluation: Formative Test, Summative Test

Topic 4: Deficiency Verification and Resolution 2:00

Terminal Learning Objective (TLO): At the end of this topic, the student will be able to verify and resolve deficiencies related to new fire protection systems and equipment.

Enabling Learning Objectives (ELO):

1. Describe how deficiencies are verified, including:
   - Observation, analysis and documentation
   - Reporting in accordance with the policies of the jurisdiction
2. Describe the procedures for resolving deficiencies, including:
   - Taking appropriate action based on the findings to gain code compliance
   - Referring to appropriate level when necessary

Discussion Questions

1. Can an inspector issue a temporary use clearance if a fire alarm system does not successfully comply with all of the components of a commissioning test?

Activities

1. To be determined by instructor.

Evaluation: Formative Test, Summative Test

Summative Testing	1:00
Formative Testing	2:00

Course: **FI-2: Field Inspection 2B** **CFST**
Hours: 40:00 (37:00 = instruction / 3:00 = testing)
Designed For: The certified Fire Inspector I advancing to the Fire Inspector II classification
Description: Upon completion of this course, the student will be familiar with fire growth potential including high piled combustible storage and components that effect fire growth; the storage, handing, and use of hazardous materials, flammable and combustible liquids, and gases; hazardous materials management plans; evaluating industrial hazardous operations and processes; and evaluating existing fire protection systems and equipment including water-based and special agent fire suppression systems and fire detection and alarm systems.
Prerequisites: FI-2: Administration
Passing Criteria: 80%
Certification: Fire Inspector II
Class Size: 30
Restrictions: None

REQUIRED STUDENT MATERIALS	EDITION	VENDORS
▪ California Fire Code	current	International Code Council (ICC)
▪ California Building Code	current	International Code Council (ICC)
▪ *Fire Inspection and Code Enforcement*	7th	IFSTA
REQUIRED INSTRUCTOR MATERIALS	**EDITION**	**VENDORS**
▪ California Building Code	current	International Code Council (ICC)
▪ California Fire Code	current	International Code Council (ICC)
▪ CCR Title 19	current	www.oal.ca.gov/publications.htm
▪ *Fire Inspection and Code Enforcement*	7th	IFSTA

VENDORS		
SFT	State Fire Training Bookstore (916-445-8158)	http://sft.fire.ca.gov

FI-2: FIELD INSPECTION 2B COURSE SYLLABUS

Course Objectives: to provide the student with…

a) Information about fire growth potential including high piled combustible storage and components that effect fire growth
b) Information about the storage, handing, and use of hazardous materials, flammable and combustible liquids, and gases including hazardous materials management plans
c) Information about evaluating industrial hazardous operations and processes
d) Opportunities to evaluate existing fire protection systems and equipment including water-based and special agent fire suppression systems and fire detection and alarm systems

Course Content 37:00

Unit 1: Introduction

Topic 1: Orientation and Administration 1:00
Terminal Learning Objective (TLO): At the end of this topic, the student will be able to
Enabling Learning Objectives (ELO):
1. [text]

Discussion Questions
1. [text]
Activities
1. [text]
Evaluation: Formative Test, Summative Test

Unit 2: Fire Growth Potential in a Building or Space (CTS: 2-7)

Topic 1: Components that Effect Fire Growth.....3:00
Terminal Learning Objective (TLO): At the end of this topic, the student will be able to describe the impact of different factors on fire behavior, determine fire growth potential in a building or space, and verify and resolve fire-growth-related deficiencies.
Enabling Learning Objectives (ELO):
1. Describe the impact of the following factors on fire behavior:
   - Heat content of materials
   - Exposed surface area
   - Material height and array
   - Continuity
   - Compartment volume and ceiling height
   - Ventilation
   - Openness of compartment
   - Fuel type
   - Availability and location of additional fuels
   - Thermal properties of the compartment
   - Ambient conditions
   - Effects of changing conditions
2. Describe how to determine fire growth potential in a building or space, including:
   - Evaluating contents
   - Evaluating interior finishes
   - Evaluating construction elements
3. Describe how to verify and resolve deficiencies, including:
   - Observation and documentation
   - Reporting in accordance with jurisdictional policies
   - Taking appropriate action to gain code compliance
   - Referring to the appropriate level when necessary

Discussion Questions
1. What are some factors that help determine fuel load?
Activities
1. To be determined by instructor.
Evaluation: Formative Test, Summative Test

Topic 2: High Piled Combustible Storage 4:00
Terminal Learning Objective (TLO): At the end of this topic, the student will be able to define high piled combustible storage, identify required permits for high piled combustible storage, and describe factors and general fire and life safety requirements related to high piled combustible storage.
Enabling Learning Objectives (ELO):
1. Define high piled combustible storage
2. Identify the required permit for high piled combustible storage
3. Describe factors related to high piled combustible storage, including:
   - Storage height
   - Item/product being stored

- Minimum size of storage array
- Volumetric limitations
- Storage methods
  - Pallets
  - Racks
  - Solid pile
- Special hazards
  - Group A plastics
  - Tire storage
  - Aerosols
  - Flammable and combustible liquids

4. Describe general fire protection and life safety requirements
   - CFC Table 2306.2
     - Fire sprinklers
     - Hose connections
       - When required by AHJ
       - First aid firefighting and overhaul purposes (NFPA 13, chapter 12, section 12.2)
       - Installed in accordance with NFPA 13, chapter 8, section 8.17.5
     - Fire detection alarm systems
     - Building access
     - Smoke and heat removal
     - Draft curtains
   - CFC 2306.9
     - Aisle width
   - CFC Table 2308.3
     - Flue spaces

Discussion Questions

1. What is high piled combustible storage?

Activities

1. Given commodity information, have students use CFC Table 2306.2 to figure out requirements.

Evaluation: Formative Test, Summative Test

Unit 4: Storage, Handling, and Use of Hazardous Materials, Flammable and Combustible Liquids, and Gases (CTS: 2-6)

Topic 1: Hazardous Materials 10:00

Terminal Learning Objective (TLO): At the end of this topic, the student will be able to identify CFC chapters that apply to hazardous materials; evaluate code compliance for storage, handling, and use of hazardous materials; identify maximum allowable quantities; verify and resolve deficiencies; and evaluate alternative protection measures.

Enabling Learning Objectives (ELO):

1. Identify the applicable CFC chapter for hazardous materials:
   - CFC Chapter 27
2. Describe how to evaluate code compliance for storage, handling and use of hazardous materials:
   - Flammable and combustible liquids
   - Compressed and liquefied gases
   - Cryogenic fluids
   - Flammable solids
   - Highly toxic and toxic materials
   - Oxidizers
   - Radioactive materials

- Corrosive materials
- Unstable materials
- Water-reactive solids and liquids

3. Describe maximum allowable quantities (MAQ) as it relates to:
   - Occupancy classification
     - M (mercantile) and S (storage)
     - H (hazardous)
   - Fire sprinklers
   - Control areas
   - Storage cabinets
   - Gas cabinets
   - Exceptions
4. Describe how to verify and resolve deficiencies, including:
   - Observation and documentation
   - Reporting in accordance with jurisdictional policies
   - Taking appropriate action to gain code compliance
   - Referring to the appropriate level when necessary
5. Describe how to evaluate alternate protection measures for storage, handling, and use of hazardous materials to ensure the proposed protection level is equivalent to the intent of applicable codes and standards
   - The alternate level of protection must provide equivalent or greater protection than the applicable code or standard

Discussion Questions

1. What is the use of a control area and how it is defined?

Activities

1. Using Table 2703.1.1(1), determine the MAQ for several selected chemicals and discuss answers as a class.

Evaluation: Formative Test, Summative Test

Topic 2: Hazardous Materials Management Plan.....2:00

Terminal Learning Objective (TLO): At the end of this topic, the student will be able to describe the requirements for, and contents of, a Hazardous Materials Management Plan, and evaluate control areas, compliance regulations related to reporting unauthorized hazardous materials discharges, general safety regulations related to personnel training and emergency procedures, and regulatory compliance regarding facility closure.

Enabling Learning Objectives (ELO):

1. Describe the requirements for, and contents of, a Hazardous Materials Management Plan, including:
   - Requirements
     - As determined by AHJ
   - Contents
     - Storage and use areas
     - Maximum amount stored or used in each area
     - Range of container sizes
     - Location of emergency, isolation and mitigation valves and devices
     - Product conveying piping containing liquids or gases
     - On and off valve positions
     - Storage plan
     - Location and type of on-site emergency equipment
2. Describe how to evaluate control areas as they relate to hazardous materials storage, including:
   - Maximum allowable quantities (MAQ's)
   - Material compatibility

- Indoor or outdoor storage areas

3. Describe how to evaluate compliance with regulations related to reporting unauthorized discharges of hazardous materials, including:
   - Mandatory notification of fire code official
   - CCR Title 19 Sections 2703 and 2705
   - CFC Sections 2703.3.1.1 – 2703.3.1.4
4. Describe how to review records to evaluate compliance with general safety regulations related to personnel training and emergency procedures for sites storing or using hazardous materials, including:
   - Being familiar with chemical characteristics of materials
   - Being aware of necessary action for mitigation
5. Describe how to evaluate compliance with regulations related to closing a facility that has used hazardous materials, including:
   - Requiring a closure plan for facility
   - Reviewing the plan to confirm proper handling and mitigation of all hazardous chemicals and processes
   - Inspecting facility to ensure compliance with closure plan

Discussion Questions

1. When is a Hazardous Materials Management Plan required?
2. What are the components of a Hazardous Materials Management Plan?

Activities

1. Review a sample Hazardous Materials Management Plan for completeness and accuracy.

Evaluation: Formative Test, Summative Test

Unit 3: Industrial Hazards and Processes (CTS: 2-4)

Topic 1: Industrial Hazards and Processes Evaluation 8:00

Terminal Learning Objective (TLO): At the end of this topic, the student will be able to identify the applicable CFC chapter for industrial hazards and processes, and evaluate code compliance, hazardous conditions, alternate protection measures, and fire protection plans and practices related to hazardous equipment, processes, and operations.

Enabling Learning Objectives (ELO):

1. Identify the applicable CFC chapter for industrial hazards and processes:
   - CFC Chapter 3
2. Describe how to evaluate code compliance for industrial hazards and processes, including:
   - Welding
   - Flammable finishes
   - Dipping and coating
   - Quenching
   - Dry cleaning
   - Dust hazards
   - Asphalt and tar kettles
   - Semiconductor/electronic manufacturing
   - Motion picture and television production
   - Aviation facilities
   - Fruit ripening
   - Fumigation
   - Woodworking
   - Waste handling
   - Industrial ovens
3. Describe how to evaluate hazardous conditions involving equipment, processes or operations so

that the equipment, processes or operations are in accordance with applicable codes and standards, including:
- Identifying hazard condition
- Reviewing applicable codes and standards
- Identifying code violations

4. Describe how to verify and resolve deficiencies, including:
   - Observation and documentation
   - Reporting in accordance with jurisdictional policies
   - Taking appropriate action to gain code compliance
   - Referring to the appropriate level when necessary
5. Describe how to evaluate alternate protection measures for equipment, operations or processes to ensure the proposed protection level is equivalent to the intent of applicable codes and standards
   - The alternate level of protection must provide equivalent or greater protection than the applicable code or standard
6. Describe how to evaluate fire protection plans and practices for a facility housing a complex process or operation, including:
   - Determining fire growth potential
   - Level of protection appropriate for hazard
   - In accordance with applicable standards and the policies of the jurisdiction

Discussion Questions

1. Where would you find the code requirements for spraying operations?
2. When does the fire code not regulate a dry cleaning establishment?
3. Where would you find permit requirements for hazardous processes?

Activities

1. To be developed

Evaluation: Formative Test, Summative Test

Unit 4: Existing Fire Protection Systems and Equipment (CTS: 2-2)

Topic 1: Evaluation of an Existing Fire Protection System 1:00

Terminal Learning Objective (TLO): At the end of this topic, the student will be able to evaluate fire protection systems and equipment, observe and verify field conditions to evaluate fire protection systems, and verify and resolve deficiencies.

Enabling Learning Objectives (ELO):

1. Describe how to evaluate fire protection systems and equipment, including:
   - Approved for occupancy or hazard being protected
   - Appropriate agent for hazard
   - Appropriate equipment in the appropriate location for hazard
   - Properly maintained
2. Describe the field conditions that must be observed and verified to evaluate existing fire protection systems, including:
   - Installation per approved plans
   - Unobstructed devices
   - Documentation of required testing
   - Damaged equipment
   - Control valves in open and locked open position
3. Describe how to verify and resolve deficiencies, including:
   - Observation and documentation
   - Reporting in accordance with jurisdictional policies
   - Taking appropriate action to gain code compliance

- Referring to the appropriate level when necessary

Discussion Questions

1. How would you evaluate an existing system?

Activities

1. Given images of non-compliant systems, have students work in small groups to identify the problems with each.

Evaluation: Formative Test, Summative Test

Topic 2: Water-Based Fire Suppression Systems.....4:00

Terminal Learning Objective (TLO): At the end of this topic, the student will be able to inspect an existing water-based fire suppression system and equipment, verify that systems and equipment comply with construction documents, and verify and resolve deficiencies.

Enabling Learning Objectives (ELO):

1. Describe how to inspect existing water-based fire suppression systems and equipment to comply with applicable codes and standards, including:
   - Automatic sprinkler systems
   - Water spray fixed systems
   - Water mist systems
   - Foam water systems
   - Standpipe and hose systems
   - Fire pumps
2. Describe how to verify that systems and equipment comply with construction documents, including:
   - Applying applicable codes and standards
     - NFPA 25 as adopted and amended by California
     - CCR Title 19
     - CFC Chapter 9, Sections 9.03 and 9.05
   - Ensuring life safety systems and building services equipment are installed, inspected and tested to perform as described in the operations and maintenance manuals
3. Describe how to verify and resolve deficiencies, including:
   - Observation and documentation
   - Reporting in accordance with jurisdictional policies
   - Taking appropriate action to gain code compliance
   - Referring to the appropriate level when necessary

Discussion Questions

1. What are common deficiencies found during inspections of existing water-based fire suppression systems?

Activities

1. To be determined by instructor.

Evaluation: Formative Test, Summative Test

Topic 3: Special Agent Fire Suppression Systems.....2:00

Terminal Learning Objective (TLO): At the end of this topic, the student will be able to verify that special agent fire suppression systems and equipment comply with codes and standards and construction documents, and verify and resolve deficiencies.

Enabling Learning Objectives (ELO):

1. Describe how to verify that special agent fire suppression systems and equipment comply with applicable codes and standards, including:
   - Dry chemical
   - Wet chemical
   - Clean agent
   - Foam

2. Describe how to verify that systems and equipment comply with construction documents, including:
   - Applying applicable codes and standards
     - CCR Title 19 Section 904
     - CFC Chapter 9, Sections 9.04
   - Ensuring life safety systems and building services equipment are installed, inspected and tested to perform as described in the operations and maintenance manuals
3. Describe how to verify and resolve deficiencies, including:
   - Observation and documentation
   - Reporting in accordance with jurisdictional policies
   - Taking appropriate action to gain code compliance
   - Referring to the appropriate level when necessary

Discussion Questions

1. What are common deficiencies found during inspections of existing special agent suppression systems?

Activities

1. To be determined by instructor.

Evaluation: Formative Test, Summative Test

Topic 4: Fire Detection and Alarm Systems 2:00

Terminal Learning Objective (TLO): At the end of this topic, the student will be able to inspect fire detection and alarm systems and equipment to ensure compliance with codes and standards and construction documents, and verify and resolve deficiencies.

Enabling Learning Objectives (ELO):

1. Describe how to inspect fire detection and alarm systems and equipment to comply with applicable codes and standards, including:
   - Automatic alarm initiating devices
   - Manual alarm initiating devices
   - Alarm signaling systems
2. Describe how to inspect fire detection and alarm systems and equipment to comply with applicable codes and standards, including:
   - Automatic alarm initiating devices
   - Manual alarm initiating devices
   - Alarm signaling systems
3. Describe how to verify that systems and equipment comply with construction documents, including:
   - Applying applicable codes and standards
     - NFPA 72
     - CCR Title 19 Division 1 Chapter 4
     - CFC Chapter 9, Section 9.07
   - Ensuring life safety systems and building services equipment are installed, inspected and tested to perform as described in the operations and maintenance manuals
4. Describe how to verify and resolve deficiencies, including:
   - Observation and documentation
   - Reporting in accordance with jurisdictional policies
   - Taking appropriate action to gain code compliance
   - Referring to the appropriate level when necessary

Discussion Questions

1. What are common deficiencies found during inspections of existing fire detection and alarm systems?

Activities

1. To be determined by instructor.

Evaluation: Formative Test, Summative Test

Summative Testing	1:00
Formative Testing	2:00